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ABSTRACT

Literature on the sighted child suggests that blind children might be delayed in language acquisition and/or restricted in the semantic content of their utterances and in the communicative intentions they express. This study questions the use of guidelines appropriate for monitoring sighted children in the study of language development in blind children. Three legally blind children were audio- and video-recorded in interaction with their parents at regular intervals through a large part of the preverbal period and the one-word stage to the emergence of the first word combinations, at 20 months. In addition, one child was recorded until she was 2 years 3 months old. The research methods included a descriptive analysis of the development of parent-child communication. Similarities and differences in the overall course of development between the subjects and sighted children were noted. One difference was that each blind child showed an unusually early mastery of basic procedures for sustaining dialogue; this step paved the way for an early acquisition of simple procedures for allocating turns in conversation. The developments observed in these children indicate that blind children find another "way into" language and suggest that the possibility for adaptation is intrinsic to the system itself.
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PREVERBAL COMMUNICATION AND EARLY LANGUAGE DEVELOPMENT
IN BLIND CHILDREN

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Recent studies of language acquisition in sighted children have given particular attention to developments which precede and may be prerequisite to the emergence of language. One line of emphasis has concentrated on the semantics of children's early utterances, and proposed a relationship between cognitive development in infancy and the first stages of language development. (e.g. Bloom, 1973; Brown, 1973; Nelson, 1973). Others have attempted to show continuities between preverbal and verbal communication. (e.g. Bates et al., 1975; Bruner, 1978). Despite their differing priorities both lines of approach suggest that blindness in infancy may have important consequences for the emergence of language, since implicitly or explicitly, each has assumed the dominance of vision. Many semantic approaches, for example, have leaned heavily on Piaget's theory which is often interpreted as giving vision a primary role; and studies aiming to elucidate the nature of preverbal communication and its relationship to language have emphasised the significance of just those communicative systems which the blind child lacks. These include the use of mutual gazing in heightened play exchanges in the early months, (e.g. Stern, 1974) the role of the visual channel in monitoring mutual attention to distal objects (e.g. Collis & Schaffer, 1975) and the emergence of gestures such as pointing and reaching in demand which, along with distinctive prosodic marking, persist to convey the child's communicative intentions once she begins to use words (e.g. Bates et al., 1975; Carter, 1974).

The assumption that vision plays a major role in infant development and early language acquisition is to some extent supported by clinical literature on the early development of blind children. This emphasises the considerable problems which blindness may pose for the development of social interaction and for the infant's constructing an object world beyond her immediate sphere of action. (e.g. Fraiberg, 1977; Wills, 1970). Although there has been surprisingly little systematic research into language development in blind children, what evidence there is suggests that language problems of various kinds are common amongst the blind child population, and that relative delays and language difficulties are particularly marked in the early stages (see Urwin, 1979).

This is in line with what one might expect from the sighted child literature. More specifically, this suggests that blind children might be delayed in first beginning to use language, and/or show restrictions in both the semantic content of their utterances and in the communicative intentions which they express. But it may be less than useful to assume that developmental delays are inevitable. Nor are the uses which sighted children find for speech necessarily the most appropriate guidelines for monitoring the progress of the child who cannot see. It is possible that blind children may discover functions for language which are less necessary to sighted children, and that this may have important implications for the language acquisition process.

A Longitudinal Investigation.

This paper describes the development of three congenitally blind children who, to put it simply, each found another "way in" to language, and other ways of using it. The three children, Steven, Jerry, and Suzanne, are all legally blind and have no additional neurological impairment. Steven and Jerry are first born children. Suzanne has an elder sister, Elaine, who is sighted. Jerry and Suzanne are totally blind, but Steven has a little sight in his left eye. Although extremely limited, this gave him considerable advantages, particularly in the development of object skills. Nevertheless, as will become clear his early language development showed many of the distinguishing characteristics of the totally blind.

The three children were observed, audio and video recorded in interaction with their parents in their own homes at regular intervals. Steven and Jerry were visited every fortnight and were followed through a large part of the preverbal period and the one-word stage to the emergence of the first word combinations. The investigation was closed at approximately 20 months in both cases. The study of Suzanne spanned an older age range. The Institute of Research into the Visually Handicapped, Birmingham, followed her development through the first year, and their video-tapes and other records have been made available to me. I myself began following Suzanne from 15 months and made monthly recordings until she was 21 months old. Further recordings were made at 2 years and 2 years 3 months. According to Brown's (1973) criteria she was at the onset of Stage III at the final visit.

The research methods included a descriptive analysis of the development of parent-child communication. Largely based on the video data, this analysis gave particular attention to how and to what extent mutual attention was regulated where opportunities for eye contact were absent or reduced, the adjustments made by the parents, the communicative means available to the infants to initiate and control interaction in different kinds of contexts, and to developments in their understanding of reciprocal roles in interaction. Changes in the children's understanding of objects were by and large inferred from their spontaneous explorations of their own toys and other familiar objects. Informal experiments were included additionally to investigate certain aspects of development, such as the ability to search for objects in more detail. Along with contextual information recorded concurrently, the audio recordings served as the major data base for analysing the children's use of vocalisation in the preverbal period and eventually their use of language and also provided samples of the mother's speech. Ultimately developments in the children's lexicons and use of language were examined in relation to changes in both social interaction and knowledge of objects.

Compared to the majority of blind children, these children have developed extremely well. This was largely due to the opportunities for social interaction and active exploration provided by the parents. This itself depended on their appreciating alternative cues to the infant's attention and on their ability to use alternative communication systems themselves. The children's home environments were very

different and the parents differed in how they thought that they themselves could contribute to their children's development. As has been discussed elsewhere, (Urwin, 1978) contrasting characteristics of parent-child interaction were ultimately reflected in the children's early vocabularies and use of language. Nevertheless, overall there were many similarities in each child's course of development in social interaction and understanding of objects. There were also striking parallels with sighted children's developments.

During the preverbal period the development of communication showed many of the characteristics described for sighted infants and their parents by Bates *et al.* (1975), Sugarman-Bell, (1978), Trevathen & Hubley (1978) and others. In the last quarter of the first year, for example, when sighted infants begin to gain adults' attention by producing elements of well established rituals or performances which have previously been successful in making adults laugh, (Bates *et al.*, 1975), these infants became capable of sustaining and controlling the parents' participation through the use of regularised communicative procedures. Here, however, in the absence of, or with reduced opportunities for eye contact, these were based on vocal exchange (discussed below), or on sophisticated forms of body play. Each of the blind children's first words clearly originated in well-routinised forms of interaction, which were highly affective and in which he or she had gained some measure of active control, and, as is consistent with the evidence on continuities between preverbal and verbal communication in sighted children, their use in communication was supported by distinctive prosodic marking and/or regularised action procedures which were already established prior to speech.

Through the single word stage itself there were, again, many parallels with sighted children's developments as they extended early acquired words into new contexts, including those involving objects. For all three children at around eighteen months a rapid expansion in vocabulary and the appearance of the first word combinations co-occurred with changes in search behaviour which indicated that they knew of the continued existence of objects apart from their own actions, and the beginnings of representational play.

While cognitive development was clearly integral to changes in these children's use of words, the emergence of representation by eighteen months calls into question the common assumption that the development of sensorimotor intelligence is necessarily delayed in blind children. However, in spite of the broad similarities with sighted children's development their limited or absent vision was not without implications.

Since they were unable to look towards their parents, prior to speech these children's attempts to initiate interaction were inherently ambiguous. Although they were capable of prompting and controlling their parents' actions once some routine was underway, by the end of the first year these routines still depended on physical contact, and on the parents putting themselves at their children's disposal.

Studies of preverbal communication in sighted children have given particular attention to the emergence of request gestures and communicative pointing in the last quarter of the first year. Along

with offering and exchanging objects, these developments are taken to mark the child's ability to coordinate interaction with people with action on objects (Sugarman-Bell, 1978). At a comparable age, the blind children showed this kind of coordination. Jerry, for example, would prompt and prolong imitative sequences involving banging on objects to produce sounds. But at this time none of the children were using gestures or other means to draw attention to or request distant objects, and none of the children began to offer objects spontaneously. The latter development emerged after deliberate training from the parents and in Suzanne's case it was not consolidated until the third year.

These restrictions on the communicative means available to the infants in the preverbal period cannot be dissociated from limitations in their access to the surrounding context, consequent on their lack of vision. Both these factors contributed to specific restrictions in their use of words in the single word stage, compared to sighted children.

Initially, for example, the children's requests for body play were confined to demands for "more" of some game initiated by the parent and depended on physical contact. In the totally blind children, requests for specific forms of play instigated entirely by the children themselves eventually emerged after a period in which independent of physical contact, the children began to use movements from well established body games, to control the actions of the interactive partner across the space between them.

In generalising early acquired words, the children showed the multiplicity of function which, Bloom (1973) suggests, is a major characteristic of the one-word stage. But they showed certain restrictions with respect to the particular "function" words which Bloom delineates. All the children acquired "more", "no", "there" and "gone" or equivalents relatively early. But by the time they were beginning to combine words, the child with a little vision was the only one of the three to use "there", "more" and "no" to comment on the occurrence or reoccurrence of objects as distinct entities and to refer to the non-existence of objects where expected.

The blind children, of course, had little access to just those contrasts which appear to be potent elicitors of comment in sighted children in the early stages, such as objects disappearing from the visual field, or the simultaneous presence of members of the same class of objects. Related constraints also appeared in the way they referred to other people and used object names at the end of the one word stage. By this time all the children would gain attention by calling to people present with their names. But none of the children were recorded as producing a single-word utterance which could be construed as a spontaneous comment on another person's actions. Although this is not an early development for sighted children, Greenfield & Smith (1976) report that the two children in their longitudinal study had begun to refer to other people as agents of their own actions before the end of the single-word period. As far as references to objects were concerned, very occasionally the children would name particularly familiar objects when they heard them. Steven would announce the name of things if they came within his limited visual

range. But in general the children's naming objects depended on their being in physical contact with them. Similarly, Steven was the only child to be making requests for objects with any degree of frequency by 20 months. These were restricted to demands for particularly familiar things when he could see them. Jerry was not yet demanding objects by the close of the investigation. At a comparable age Suzanne was just beginning to make requests for lost objects, which she handled with "Where's X?" questions. But at this time they occurred very infrequently.

Suzanne's language development was somewhat more advanced than the other two children's. It is of considerable interest that, by 21 months she had produced examples of all of Brown's (1973) apparently universal set of two-term semantic relations. However, some relations occurred rarely. Locative relations were particularly infrequent. By 21 months she had not been observed referring explicitly to the place of objects outside her immediate sphere of action. The majority of Suzanne's utterances could be classified as Agent-Action, Action-Object or Agent-Object constructions, the dominant relations expressed by sighted children in Stage I. But just as the children did not comment on the actions of others in the one word stage, Suzanne's two-word and longer constructions referred almost exclusively to her own actions or intended actions, rather than to those of other people.

This paucity of references to distant locations, objects and events and the actions of others is likely to be common, if not general, in blind children of this age. But to view these restrictions in terms of a simple notion of "developmental delay" is misleading. For sighted children of this age references to distal events and requests for objects are largely, if not entirely, elicited by things that they see. To demand equivalent behaviour from the blind child ignores the fact that apparently similar phenomena require a higher level of cognitive functioning on the part of the child without vision. It also ignores the nature of the immediate context for the blind child, and the possibility that her competence might be developing rapidly in other ways.

Despite broad similarities in overall course of development, there were also indications that these children were using language somewhat differently from their sighted counterparts. In particular, each child showed an unusually early mastery of basic procedures for sustaining dialogue. This bias antedated the emergence of speech.

In each case forms of vocal exchange based on mutual imitation were firmly established before the children began to use standard worlds. While imitative routines are not uncommon amongst sighted infants and their parents, in Jerry's case in particular, as his mother put it, by the end of the first year you could "have like a conversation with him". These quasi dialogues might last up to fifteen minutes at a time, the child showing an exquisite control over his mother's following response.

These exchanges clearly performed important functions in sustaining social contact between the blind infants and their parents. But they also paved the way for an early acquisition of simple procedures for allocating turns in conversation. The two totally blind

infants in particular, rapidly began to use rising intonation to prompt replies from the parents. Indeed, one of Suzanne's first acquisitions and most frequently produced single word utterances was "Ay?". As can easily be imagined, this proved highly effective since, whatever the context, "Ay?" was virtually guaranteed to induce her mother to speak again.

Other devices for maintaining conversation emerged over the course of the single word period. By 18 months Jerry, for example, would use "Hello" and "Bye-bye" to open and close encounters, and from 17 months Suzanne began to use a standard conversation opener, "Mummy?" To this the mother was obliged to reply with an open-ended question, "Yes, Suzanne?" In this way she effectively encouraged the child to speak again. At first in such contexts the majority of Suzanne's following utterances were inarticulate. The mother would continue the conversation by interpreting the child's unintelligible utterances or by commenting on what she was doing. As Suzanne's lexicon increased and she began to combine words, she herself would provide the topic of conversation explicitly; and by 21 months she might throw the onus back onto her mother again by following her mother's acknowledgement with "Where are yer?"

From calls and acknowledgements, to greetings and farewells, these simple devices for allocating turns in conversation carry with them a basic reversibility, suggesting the potential for representing the role of the other party in conversation. Earlier it has been mentioned that in each case a rapid expansion of vocabulary at around eighteen months co-occurred with the beginnings of representational play. Here, however, there were important differences between Steven and the two totally blind children. All recorded examples of Steven's early pretend play involved objects and were clearly based on things which he had seen. For the two totally blind children I could identify relatively few episodes of pretence involving transformations of objects. But as the children's language development progresses, in their own play one could hear them reconstructing past "conversations" between themselves and another party. The following example shows Jerry reconstructing a conversation which he had had with his father some two hours previously. It is based on a game which evolved as the father attempted to promote the child's mobility and which I have called "Are you sure?" Using a "gruff" voice for his father, Jerry represents the two roles in mock dialogue.

JERRY: 1. 6. 2

Jerry is rambling round the room while both parents are elsewhere.

"Father's voice" : Are you sure?

Jerry's voice : I sure Dad

"Father's voice" : Are you sure?

Jerry's voice : I sure Dad

"Father's voice" : You sure?

Jerry's voice : I sure Dad
I sure Dadda

and bursts of hysterical laughter.

In acquiring words for naming familiar people and linguistic procedures for sustaining contact with them, these children had acquired names for those objects in their environment which were capable of answering back. Though their speech was initially highly imitative, it is important to appreciate the many functions which imitation might have served. Besides consolidating the basic dialogue procedures themselves, it allowed parent and child to convey their attention to one another particularly precisely. Particularly in Jerry's case imitative exchanges appeared to aid mobility as the child used his mother's voice as a reference point. In addition, imitation allowed parent and child to keep alive a topic of conversation where cues from the immediate context were minimal.

Since Suzanne was followed to an older age, it is possible to give some account of her later language development. By 2 years 3 months many of the relative restrictions in her use of language at 21 months had apparently been resolved. She was referring to distal objects and locations, marking recurrence and making requests for objects frequently. In the immediate context she would comment explicitly on what her sister was doing when those actions were familiar to her. She was referring to absent people and reconstructing explanations about significant past or habitual events. Exact imitation appeared to have given way to a strategy whereby she would incorporate and build on all or part of her mother's preceeding utterance into her own following utterances. She was also showing the extensive use of questioning which is a common characteristic of older blind children (Urwin, 1979).

Of factors contributing to this developmental progress, further developments in mobility proved to be one of the most significant, as this both extended her opportunities for exploration and opened new contexts in which talk could take place. The implications of cognitive changes, involving an increasing ability to categorise objects, to plan action and to sustain a goal over space and time, were particularly evident in her ability to make requests for objects. Cues to the presence of objects outside her own sphere of action were of course still minimal. But she would now demand objects necessary to complete some plan already underway; or while playing with one toy she might demand another toy related to it, or of a similar sort. Compared to the earlier period she made more use of the sounds going on around her. Hearing her sister playing with a particular toy, for example, she would identify the toy and demand it; or hearing her sister go into the adjoining room, she could recognise where she was going, what she was doing, and would insist that she be allowed to go there too.

Suzanne was clearly building a model of her environment. But though her developments in mobility and cognitive functioning were important, as significant a contribution to Suzanne's later language development came from the mother's own use of speech. In interpreting the child's communicative intentions and sustaining dialogue sequences, Suzanne's mother consistently showed characteristics associated with mother's speech to sighted children whose syntactic development is relatively advanced (Cross, 1977). But in addition there were a number of ways in which Suzanne's mother's speech seemed particularly suited to extending the child's awareness of what was going on around her.

In the first period of the study, for example, although the mother talked predominantly about what Suzanne was doing she also consistently referred to familiar people who were absent and would comment on what Elaine was doing in the immediate context. Increasingly these references came in response to initiatives from the child, as she began to call out to her sister or the children next door and to produce the names of significant others. Developments in the child's understanding of objects similarly produced corresponding changes in the mother's use of language. As it became evident, for example, that Suzanne was beginning to search for lost objects, the mother introduced "Where's X?" questions to encourage her to explore the space around her. In the final months developments in Suzanne's mobility produced further changes in the mother's demands and in the context of her speech. For example, she would seldom respond to the child's requests for objects by providing them herself. Rather, she would specify their location relative to the child or to some now familiar landmark within the room.

In this way changes in the mother's speech reflected the child's needs, prefigured developments in her use of language, and extended her access to the surrounding context. Through the development of dialogue Suzanne gained a handle on the outside world.

Concluding Discussion.

The close parallels between these children's developments with those of sighted children challenge the assumption that the dominance of vision is necessary. It also questions a view implicit in much comparative or interventionist research into the development of children with visual or other sensory handicaps. Essentially this view construes the handicapped child as being like a normal child with "something missing". As a corollary, adaptation to the handicap is assumed to result through a secondary process which evolves to compensate for an initial disadvantage. In contrast these children's developments suggest that the possibility for adaptation is intrinsic to the system itself.

I have merely hinted at the kinds of discoveries which the parents made concerning these infants' communicative potential and their own. Nevertheless, these children's developments suggest that, in interacting with a blind infant, it is possible to use speech, touch and other forms of physical contact in ways which will allow her to come to appreciate the communicative significance of her own actions, and to develop an understanding of reciprocal roles.

That these children showed certain restrictions in their early speech compared to sighted children is undeniable. These restrictions are best understood as a consequence of the nature of the blind child's access to the immediate context, and the difficulties which lack of vision poses for sharing in that context with other people. But at the same time these children found uses for speech which are unlikely to be evident or to develop so early in sighted children. The example of the child followed to an older age suggests how, given adequate opportunities for active exploration, the development of dialogue can provide a route through which the blind child gains access to what is going on around her, allowing her to build a model of her world.

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